REMARKS

The Office Action dated January 13, 2009, has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

By this Response, claims 1, 12, 15, and 20 have been amended to more particularly point out and distinctly claim the subject matter of the present invention. Claims 25-29 have been cancelled without prejudice or disclaimer. No new matter has been added. Support for the above amendments is provided in the Specification, at least, on page 3, line 11. Accordingly, claims 1-12 and 15-24 are currently pending in the application, of which claims 1, 12, 15, and 20 are independent claims.

In view of the above amendments and the following remarks, Applicants respectfully request reconsideration and timely withdrawal of the pending rejections to the claims for the reasons discussed below.

Specification

The Specification was objected to as allegedly failing to provide proper antecedent basis for the claimed subject matter. Specifically, the Office Action alleged that the Specification fails to provide proper antecedent basis for the "computer program product" recited in claims 25-29.

Application No.: 10/511,825

Accordingly, to expedite prosecution of this application, Applicants have cancelled claims 25-29 without prejudice or disclaimer, rendering the objection to the Specification moot.

Therefore, Applicants respectfully request withdrawal of the objections of the Specification, and respectfully submit that the Specification is in condition for issuance.

Claim Objections

The Office Action objected to claims 26 and 28 because of minor informalities. Specifically, the Office Action indicated that the limitations, "the for the," recited on line 3 of the claims, should be changed to "for the."

Accordingly, Applicants have cancelled claims 26 and 28 without prejudice or disclaimer, rendering the objection of claims 26 and 28 moot.

Therefore, Applicants respectfully request withdrawal of the objections to claims 26 and 28.

Claim Rejections under 35 U.S.C. § 101

The Office Action rejected claims 15-19 under 35 U.S.C. §101 as allegedly directed to non-statutory subject matter. In particular, the Office Action alleged that the subject matter recited in claims 15-19 is directed to software *per se* since the claims are missing a hardware element in the body of the claim limitations. The Office Action further alleged that the Specification on page 7, paragraphs 1-4, describes that the

allocating and the change states are not performed by hardware, and, therefore, the claims are interpreted as software *per se*, which is thus non-statutory subject matter. Applicants respectfully traverse these rejections for at least the following reasons.

Applicants respectfully submit that the Specification, at least, on page 6, paragraphs 1-3, as illustrated in FIG. 1, describes a distinct structural element (hardware). In particular, FIG. 1 and the Specification describe the link security controller 15 contained within link controller 13 of hub 2, which is configured to allocate link-level addresses and change from time to time the link-level addresses, as recited in claims 15-19. Since the claims are to be construed in light of the Specification, one of ordinary skill in the art would appreciate that the communication controller as recited in claims 15-19 is a hardware element. Therefore, the Office Action's allegation that the subject matter recited in claims 15-19 is directed to software *per se* is incorrect. Accordingly, claims 15-19 are directed to statutory subject matter.

Applicants respectfully request withdrawal of the rejections of claims 15-19 under 35 U.S.C. §101 and respectfully submit that claims 15-19 are in condition for allowance.

Claim Rejections under 35 U.S.C. §103(a)

Claims 1-7, 9, 12, 15, 20, and 25

The Office Action rejected claims 1-7, 9, 12, 15, 20, and 25 under 35 U.S.C. §103(a) as being allegedly unpatentable over Elliott, *et al.* (U.S. Patent No. 5,276,813) ("Elliott") in view of Lyle (U.S. Patent No. 6,886,102), and further in view of Nikander

(Great Britain Patent No. GB 2367986 A). Applicants respectfully submits that the claims recite subject matter that is neither disclosed nor suggested in the combination of Elliott, Lyle, and Nikander.

Claim 1, upon which claims 2-11 depend, recites a communication system. The communication system includes a plurality of communication nodes connected by a data link, and a communication controller configured to allocate link-level addresses to the communication nodes. The communication nodes may be identified for communications over the data link. The data link is a shared data link. The communication controller is further configured to change from time to time the link-level addresses allocated to each communication node and to transmit the newly allocated link-level address to a respective communication node in an encrypted form.

Claim 12 recites a method for communicating data in a communication system. The communication system includes a plurality of communication nodes connected by a data link and a communication controller. The method includes allocating link-level addresses to the communication nodes whereby the communication nodes may be identified for communications over the data link. The data link is a shared data link. The method further includes changing from time to time the link-level addresses allocated to each communication node, and transmitting the newly allocated link-level address to a respective communication node in an encrypted form.

Claim 15, upon which claims 16-19 depend, recites a communication controller for operating in a communication system including a plurality of communication nodes

Application No.: 10/511,825

connected by a data link. The communication controller is configured to allocate link-level addresses to the plurality of communication nodes. The communication nodes may be identified for communications over the data link. The data link is a shared data link. The communication controller is further configured to change from time to time the link-level addresses allocated to each communication node and to transmit the newly allocated link-level addresses to a respective communication node in an encrypted form.

Claim 20, upon which claims 21-24 depend, recites a method for operating a communication controller in a communication system including a plurality of communication nodes connected by a data link. The method includes allocating link-level addresses to the plurality of communication node. The communication nodes may be identified for communications over the data link. The data link is a shared data link. The method further includes changing from time to time the link-level addresses allocated to each communication node and transmitting the newly allocated link-level addresses to a respective communication node in an encrypted form.

Applicants respectfully submit that certain embodiments of the present invention provide non-obvious advantages. Specifically, certain embodiments of the present invention relate to a communication system including a plurality of communication nodes connected to a data link. The communication controller allocates link-level addresses to the communication nodes, whereby the communication nodes may be identified for communications over the data link. The communication controller changes from time to time the link-level addresses allocated to each of the plurality of communication nodes

- 13 -   Application No.: 10/511,825

and transmits the newly allocated link-level address to a respective communication node in an encrypted form to protect transferred data from being access by an unauthorized person.

Embodiments of the invention address the problem with networks having a shared link, whereby any unit can intercept the data traffic sent to all of the units. As described in the Specification, at least, on page 1, third paragraph, in a shared media network a number of entities are connected to each other by a common data link, whereby data is intended for one or more of the entities is broadcast over the link. If it is intended that only one of the entities should receive certain data, then a broadcast and select scheme may be used.

In such a network, problems concerning privacy can arise that even persist when all payload data is encrypted. Because the header or receiver address must be readable for all of the units, anyone can still draw conclusions about the behavior of the entities out of the overall data traffic. To overcome this problem, embodiments of the invention change the addresses from time to time of *each* of the plurality of communication nodes *connected by a shared data link.*

As will be discussed below, the combination of Elliot, Lyle, and Nikander would fail to disclose or suggest each and every element recited in claims 1-7, 9, 12, 15, and 20, and therefore fails to provide the advantages and the features discussed above. Claim 25 has been cancelled without prejudice or disclaimer.

Application No.: 10/511,825

Elliot is directed to a method for acquiring addresses in an input/output system. Elliot describes a computer I/O system including a plurality of link-level facilities and a dynamic switch having a plurality of ports. Each link-level facility is attached to one of the ports. As each of the link-level facility comes on line, the link-level facility sends an acquire link address (ALA) frame and waits for a response (ACK) frame. The ALA frame may be addressed to a general to-whom-it-may-concern address and have a source address of who-am-I. When receiving an ALA frame, the dynamic switch returns an ACK frame having a unique link address assigned to the sender of the ALA frame. Provision is made for determining if there is a dynamic switch present, or, if the link-level facilities are connected together by a static connection through the dynamic switch for the link-level facility of a channel to assign the unique link addresses (Elliot, Abstract; col. 2, line 47, to col. 3, line 32).

Lyle is directed to a system and method for protecting a computer network against denial of service attacks. In particular, Lyle describes a system and method for determining whether a sender seeking to send a message to a receiving computer system via a network is an authorized sender. A request to communicate is received from the sender, and a number N1 is selected. A hash value for the number N1 is calculated, whereby the hash value is sent to the sender (Lyle, Abstract; col. 2, line 42, to col. 3, line 2).

Nikander is directed to an IP network authorization using a coded interface identifier part of an IP address. Nikander describes a method for verifying that a host

Application No.: 10/511,825

coupled to an IP network is authorized to use an IP address for which the host claims as its own. The IP address includes a routing prefix and an identifier part. The method includes receiving from the host one or more components, applying a one-way coding function to each component and/or derivatives of each component. The method further includes comparing the result or a derivative of the result against the interface identifier part of the IP address. If the result or the derivative matches the interface identifier, the host is assumed to be authorized to use the IP address. If the result or the derivative does not match the interface identifier, the host is not assumed to be authorized to use the IP address. Nikander also describes a method for authenticating a public key and a method for generating the interface identifier part of an IP address (Nikander, page 3, line 28, to col. 5, line 8).

Assuming *arguendo* that the description of Elliott could be combined with the description of Lyle and the description of Nikander, the combination of Elliot, Lyle, and Nikander would fail to disclose or suggest each and every element recited in claims 1, 12, 15, and 20. In particular, the combination of Elliot, Lyle, and Nikander would fail to disclose or suggest, at least, "a plurality of communication nodes connected by a data link, <u>the data link being a shared data link</u> ... wherein the communication controller is further configured to change from time to time the link-level addresses allocated to <u>each</u> communication node," as recited in claim 1 (emphasis added), and similarly recited in claims 12, 15, and 20.

Application No.: 10/511,825

The Office Action alleged that Lyle describes the communication controller recited in claims 1, 12, 15, and 20, stating that Lyle describes a system that receives an indication when a change of a port/IP address is needed or when the port/IP address is not secure. Referring to column 30, lines 8-55, and Figure 19, of Lyle, the Office Action further noted that random interval changes to the port/IP address are determined by a pseudo random number generator, a new port/IP address is randomly generated, and the new randomly generated port/IP address is sent to a receiver node. The Office Action alleged that the description in Lyle reads on the communications controller recited in claim 1, and similarly recited in claims 12, 15, and 20 (See Office Action on page 6). Applicants respectfully disagree.

Applicants respectfully submit that the Office Action failed to appreciate each and every element recited in claims 1, 12, 15, and 20. In particular, the Office Action failed to appreciate that claim 1 recites, in part, "wherein the communication controller is further configured to change from time to time the link-level addresses allocated to each communication node," (emphasis added). Claims 12, 15, and 20 each have their own claim scope, but contain similar limitations.

Hence, one of ordinary skill in the art would understand that claim 1 recites features for the communication controller being configured to change the link-level addresses allocated to *each* of the plurality of communication nodes connected by a data link, whereby the data link is a *shared data link*.

Lyle, on the other hand, merely discloses a single data link between a handoff sender of a sending system and a handoff receiver of a receiving system, as illustrated in Figure 14, or an alternative arrangement in which a transaction server is disposed between the sending and receiving systems. Lyle further describes changing only a port and/or IP address of a handoff receiver. Accordingly, contrary to the Office Action's allegations, Lyle fails to disclose or suggest a change from time to time of the addresses allocated to *each* of a *plurality* of communication nodes *linked by a data link, whereby the data link is a shared data link.* In fact, Lyle fails to specifically describe a data link being a shared data link.

Elliott and Nikander fail to cure the deficiencies of Lyle. In other words, Elliott and Nikander both fail to disclose or suggest, at least, "a plurality of communication nodes connected by a data link, the data link being a shared data link ... wherein the communication controller is further configured to change from time to time the link-level addresses allocated to each communication node," as recited in claim 1 (emphasis added), and similarly recited in claims 12, 15, and 20.

Specifically, Elliott describes a computer system having a plurality of ports. A communication unit is attached to each of the ports. A unique address is allocated to each of the units when the respective unit comes online. However, as each unit is linked to a respective individual port, Elliott fails to describe a network having a structure whereby a shared data link is used. Therefore, Elliott fails to cure the deficiencies of Lyle.

Application No.: 10/511,825

Furthermore, Nikander merely describes encryption of IP addresses. Nikander fails to disclose or suggest changing from time to time the link level addresses allocated to each of a plurality of communication nodes connected by a shared data link. Therefore, Nikander fails to cure the deficiencies of Lyle.

Therefore, assuming *arguendo* that the description of Lyle could be combined with the description of Elliott and Nikander, the combination of Elliott, Lyle, and Nikander would fail to disclose or suggest each and every element recited in claim 1, and similarly recited in claims 12, 15, and 20.

Claims 2-7 and 9 depend from claim 1. Accordingly, claims 2-7 and 9 should be allowable for at least their dependency upon an allowable base claim, and for the specific limitations recited therein. Claim 25 has been cancelled without prejudice or disclaimer.

Accordingly, Applicants respectfully request withdrawal of the rejections of claims 1-7, 9, 12, 15, 20, and 25 under 35 U.S.C. §103(a) and respectfully submit that claims 1 and 12, 15, and 20, and the claims that depend therefrom, are now in condition for allowance.

Claim 8

The Office Action rejected claim 8 under 35 U.S.C. §103(a) as being allegedly unpatentable over Elliott in view of Lyle and Nikander, and further in view of Laxman, *et al.* (U.S. Publication No. 2003/0018804) ("Laxman"). Applicants respectfully submits

Application No.: 10/511,825

that the claims recite subject matter that is neither disclosed nor suggested in the combination of Elliot, Lyle, Nikander, and Laxman.

Elliott, Lyle, and Nikander were discussed above. As previously noted above, the combination of Elliott, Lyle, and Nikander would fail to disclose or suggest each and every element recited in claim 1. Laxman fails to cure the deficiencies of Elliott, Lyle, and Nikander. Specifically, Laxman is directed to a method and apparatus for deriving a standard MAC address from a physical location (Laxman, Abstract; paragraphs [0014]-[0017]). Accordingly, Laxman fails to disclose or suggest, at least, "a plurality of communication nodes connected by a data link, the data link being a shared data link … wherein the communication controller is further configured to change from time to time the link-level addresses allocated to each communication node," as recited in claim 1 (emphasis added).

Accordingly, the combination of Elliott, Lyle, Nikander, and Laxman would fail to disclose or suggest each and every element recited in claim 1. Claim 8 depends from claim 1. Accordingly, claim 8 should be allowable for at least its dependency upon an allowable base claim, and for the specific limitations recited therein.

Accordingly, Applicants respectfully request withdrawal of the rejection of claim 8 under 35 U.S.C. §103(a) and respectfully submit that claim 1, and the claims that depend therefrom, are now in condition for allowance.

Application No.: 10/511,825

Claims 10-11, 16, 19, 21, 24, and 29

The Office Action rejected claims 10-11, 16, 19, 21, 24, and 29 under 35 U.S.C. §103(a) as being allegedly unpatentable over Elliott in view of Lyle and Nikander, and further in view of Woundy (U.S. Patent No. 6,009,103). Applicants respectfully submits that the claims recite subject matter that is neither disclosed nor suggested in the combination of Elliot, Lyle, Nikander, and Woundy.

Elliott, Lyle, and Nikander were discussed above. As previously noted above, the combination of Elliott, Lyle, and Nikander would fail to disclose or suggest each and every element recited in claims 1, 15, and 20. Woundy fails to cure the deficiencies of Elliott, Lyle, and Nikander. Specifically, Woundy is directed to a method and apparatus for an automatic allocation of resources in a network (Woundy, col. 1, line 50, to col. 2, line 42). Accordingly, Woundy fails to disclose or suggest, at least, "a plurality of communication nodes connected by a data link, the data link being a shared data link ... wherein the communication controller is further configured to change from time to time the link-level addresses allocated to each communication node," as recited in claim 1 (emphasis added), and similarly recited in claims 15 and 20. Accordingly, the combination of Elliott, Lyle, Nikander, and Woundy would fail to disclose or suggest each and every element recited in claims 1, 15, and 20.

Claims 10-11 depend from claim 1. Claims 16 and 19 depend from claim 15. Claims 21 and 24 depend from claim 20. Accordingly, claims 10-11, 16, 19, 21, and 24 should be allowable for at least their dependency upon an allowable base claim, and for

the specific limitations recited therein. Claim 29 has been cancelled without prejudice or disclaimer.

Accordingly, Applicants respectfully request withdrawal of the rejections of claims 10-11, 16, 19, 21, 24, and 29 under 35 U.S.C. §103(a) and respectfully submit that claims 1, 15, and 20, and the claims that depend therefrom, are now in condition for allowance.
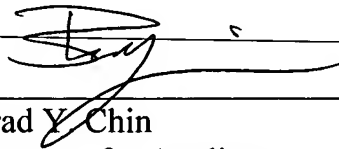
Claims 17-18, 22-23, and 26-28

The Office Action rejected claims 17-18, 22-23, and 26-28 under 35 U.S.C. §103(a) as being allegedly unpatentable over Elliott in view of Lyle and Nikander, and further in view of Marino, *et al.* (U.S. Patent No. 6,026,165) ("Marino"). Applicants respectfully submits that the claims recite subject matter that is neither disclosed nor suggested in the combination of Elliot, Lyle, Nikander, and Marino:

Elliott, Lyle, and Nikander were discussed above. As previously noted above, the combination of Elliott, Lyle, and Nikander would fail to disclose or suggest each and every element recited in claim 15 and 20. Marino fails to cure the deficiencies of Elliott, Lyle, and Nikander. Specifically, Marino is directed to a secure communication in a wireless system (Marino, col. 3, line 24, to col. 5, line 67). Accordingly, Marino fails to disclose or suggest, at least, "A communication controller ... configured to: allocate link-level addresses to the plurality of communication nodes, wherein the communication nodes may be identified for communications over the data link, the data link being a

Application No.: 10/511,825

shared data link; and change from time to time the link-level addresses allocated to each communication node," as recited in claim 15 (emphasis added), and similarly recited in claim 20. Accordingly, the combination of Elliott, Lyle, Nikander, and Marino would fail to disclose or suggest each and every element recited in claims 15 and 20.

Claims 17-18 depend from claim 15. Claims 22-23 depend from claim 20. Accordingly, claims 17-18 and 22-23 should be allowable for at least their dependency upon an allowable base claim, and for the specific limitations recited therein. Claims 26-28 have been cancelled without prejudice or disclaimer.

Accordingly, Applicants respectfully request withdrawal of the rejections of claims 17-18, 22-23, and 26-28 under 35 U.S.C. §103(a) and respectfully submit that claims 15 and 20, and the claims that depend therefrom, are now in condition for allowance.

CONCLUSION

In conclusion, Applicants respectfully submit that Elliott, Lyle, Nikander, Laxman, Marino, and Woundy, whether taken individually or in combination, fail to disclose or suggest each and every element recited in claims 1-12 and 15-24. The distinctions previously noted are more than sufficient to render the claimed invention non-obvious. It is therefore respectfully requested that all of claims 1-12 and 15-24 be allowed, and this present application be passed to issuance.

Application No.: 10/511,825

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, Applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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Application No.: 10/511,825